

# Minnesota Pharmacists and Medical Cannabis: A Survey of Knowledge, Concerns, and Interest Prior to Program Launch

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## ABSTRACT

**Objectives:** To assess Minnesota pharmacists' preparedness for the state's medical cannabis program in terms of professional competency in policies and regulations and in pharmacotherapy, as well as their concerns and perceptions about the impact on their practice. The secondary objective was to identify pharmacists' perceptions about ways to reduce potential gaps in knowledge.

**Methods:** A Web-based 14-item questionnaire was distributed to all pharmacists whose email addresses were registered with the Minnesota Board of Pharmacy.

**Results:** Pharmacists reported limited knowledge of Minnesota state-level cannabis policies and regulations and felt that they were inadequately trained in cannabis pharmacotherapy. Most pharmacists were unprepared to counsel patients on medical cannabis and had many concerns regarding its availability and usage. Only a small proportion felt that the medical cannabis program would impact their practice. Pharmacists' leading topics of interest for more education included Minnesota's regulations on the medical cannabis program, cannabis pharmacotherapy, and the types and forms of cannabis products available for commercialization. Preferred modes of receiving information were electronic-based, including email and online continuing education credit. Since the survey's completion, educational presentations have been provided to pharmacists and health professionals in Minnesota.

**Conclusion:** Pharmacists need more training and education on the regulatory and clinical aspects of cannabis in preparation for their work with patients in the medical cannabis program.

**Keywords:** medical marijuana, cannabis, pharmacists, surveys, questionnaires, clinical competence, professional practice

## INTRODUCTION

The use of cannabis for medical purposes has garnered much polarized attention in the United States since the implementation of the first state-specific medical marijuana programs. As of September 2016, cannabis had been legalized for medical use in 25 states, the District of Columbia, Guam, and Puerto Rico.<sup>1</sup> Seventeen other states permit limited access to marijuana products with restrictive concentrations of its key active components: delta-9-tetrahydrocannabinol and

cannabidiol.<sup>1</sup> Five jurisdictions with medical marijuana programs also have legalized recreational marijuana use: Colorado, Washington, Oregon, Alaska, and the District of Columbia.<sup>1</sup> Because cannabis is a federally classified Schedule I substance, its legalization at the state level offers no protection for health care professionals against consequences of conflicting federal regulations. Health care professionals who provide access to marijuana, either medically or recreationally, can be subject to federal prosecution and their licenses can be revoked by the U.S. Drug Enforcement Administration.<sup>2</sup>

Pharmacists are positioned to play an important role in understanding and communicating the impact of medical cannabis use. In some states, pharmacists are vital to the operation of the medical cannabis program. In 2014, Minnesota became the 22nd state with a medical cannabis program (see "Minnesota Medical Cannabis Program" at right). Minnesota, Connecticut, and New York share a similar inclusion of pharmacists in their state-specific programs. In these three states, pharmacists provide registered patients with consultations at one of the state-approved cannabis distribution centers. Moreover, they are the only health care professionals who are permitted to dispense cannabis products. This distinguishes these states from most other legalization states, where cannabis products—both medical and recreational—can be purchased from retail dispensaries that operate under the guidance of certified personnel known as "budtenders." To date, no research has assessed pharmacists' readiness to manage patients or legal consequences for dispensing cannabis products following implementation of medical cannabis programs—either as potential employees at the distribution centers or as providers in other settings.

## OBJECTIVES

We conducted this study to determine potential gaps in knowledge and concerns among Minnesota pharmacists regarding the state's cannabis program regulations and pharmacotherapy of cannabis products, as well as pharmacists' comfort level in counseling patients receiving these products. Our goal was to provide insight into Minnesota pharmacists' self-assessed competency and understanding that could indicate their preparedness for program implementation. A secondary objective was to assess pharmacists' preferences on ways to improve their knowledge on the medical cannabis program.

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## Minnesota Medical Cannabis Program

In May 2014, Minnesota became the 22nd state in which medical cannabis is legal for use by patients. Initially, one or more of nine qualifying medical conditions was required: cancer, glaucoma, human immunodeficiency virus/acquired immunodeficiency syndrome, Tourette's syndrome, amyotrophic lateral sclerosis, seizures, severe and persistent muscle spasms, Crohn's disease, or terminal illness with less than one year of life expectancy.<sup>3</sup> As of August 2016, patients with intractable pain also became eligible to receive medical cannabis in Minnesota.<sup>4</sup> Only nonsmoked forms of medical cannabis are permitted. These include oral liquids (including oils), tablets, capsules, and vaporized cannabis extracts (liquid or oils). In July 2015, two state-approved medical cannabis manufacturers began distributing products through four distribution centers apiece. All manufactured products contain labeled amounts of delta-9-tetrahydrocannabinol and cannabidiol in their packaged forms. Both manufacturers must conduct quality testing of their products through state-approved laboratories.

Patients who are interested in using medical cannabis must be certified as having at least one of the qualifying medical conditions by a state-registered health care

professional: a medical doctor, an advanced practice registered nurse, or a physician assistant. Then they submit an application through the state Department of Health. Once approved for registration, patients may receive up to a 30-day supply of the medical cannabis product at a time. The state's strict prohibition against the use of smoked marijuana makes it one of only two legalization states (the other being New York) where only nonsmokable forms of cannabis are permitted. Another distinctive feature of the Minnesota medical cannabis program is pharmacists' involvement in the patient registry model. Registered patients are required to meet with a pharmacist at the distribution center for a consultation on their treatment goals and selection guidance for their medical cannabis dosage and dosage form.<sup>2</sup> For assessment of side effects and effectiveness, patients will meet with their cannabis-dispensing pharmacist during follow-up visits and obtain refills as necessary. This model closely follows the process that is implemented in only two other states, Connecticut and New York. For more information on this program, visit the Minnesota Department of Health Office of Cannabis website at [www.health.state.mn.us/topics/cannabis](http://www.health.state.mn.us/topics/cannabis).

## METHODS

### Study Design, Settings, and Subjects

We conducted this cross-sectional study through an online survey platform, Qualtrics, two months before the implementation of the statewide medical cannabis program. An email containing a link to the questionnaire was disseminated to all pharmacists whose email addresses were registered with the Minnesota Board of Pharmacy's database at the end of March 2015 (N = 7,332). A follow-up email was sent weekly reminding nonrespondents to take the survey. We provided participants with information on the study's purpose, procedures, confidentiality, and voluntary nature, and explained that only pharmacists holding an active Minnesota pharmacy practice license should participate. Only those consenting to the study had access to the survey. The questionnaire was deactivated at midnight on May 1, 2015.

### Questionnaire

A 14-item questionnaire was assessed for content validity by four pharmacists and a staff member of the Minnesota Department of Health's Office of Medical Cannabis. The initial draft was modified based on their evaluation. The wording of questions and answer choices was revised to strengthen the questionnaire's validity and reliability as an assessment tool of respondents' knowledge and opinions about medical cannabis. The final draft of the questionnaire, informed consent form, and methodology were approved by the Institutional Review Board of the University of Minnesota at Minneapolis. The questionnaire assessed the following areas: 1) pharmacists' demographic information; 2) pharmacists' knowledge of the Minnesota medical cannabis program and federal regulations; 3) pharmacists' concerns about the Minnesota medical cannabis

program or issues related to medical cannabis products; and 4) pharmacists' rating and preference on medical cannabis-related topics and resources for future education. See Appendix for a copy of the questionnaire.

## RESULTS

### Response Rate

Out of the 7,332 pharmacists recruited for this study, 738 responses were collected (10%); 607 of these 738 questionnaires (81%) were fully completed. Twenty questionnaires were excluded due to invalid email addresses (n = 14) or because the pharmacists had retired or practiced out of state (n = 6).

### Demographic and Practice Characteristics

Compared with all licensed Minnesota pharmacists, the respondents were younger and more likely to practice in urban/suburban regions and in hospital and clinical pharmacy practice settings. Responding pharmacists' mean age was about 49 years. Most were from nonrural areas (75%), and the majority practiced in either community settings (39%) or hospital settings (37%). Respondent characteristics were compared with licensed pharmacist characteristics from the Minnesota Board of Pharmacy. Age and practice-setting categories were not identical for the survey and the Board of Pharmacy statistics, but rough comparisons were possible (Figure 1).

### Knowledge Assessment

The first four questions in the knowledge assessment section evaluated pharmacists' familiarity with the Minnesota medical cannabis program. Respondents had variable knowledge about dosage forms eligible for distribution under the state program. Eighty-seven percent knew that cannabis extracts in oral pill

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form were eligible, but only 46% knew that inhaled marijuana from cannabis extract was an eligible dosage form. In addition, 25% and 17%, respectively, incorrectly indicated that topical cannabis lotion or ointment and smoked marijuana leaves were eligible dosage forms.

Pharmacists' knowledge of qualifying medical conditions was also mixed. Most correctly identified cancer-related pain (90%), seizures or epilepsy (73%), and terminal illness with less than one year of life expectancy (69%), but less than half correctly identified glaucoma (46%), amyotrophic lateral sclerosis (43%), acquired immune deficiency syndrome (40%), Tourette's syndrome (24%), and Crohn's disease (24%). Smaller proportions incorrectly identified rheumatoid arthritis (13%), hydrocephalus (9%), migraine (15%), and hepatitis C (7%) as qualifying conditions. The majority correctly understood that patients needed to enroll in the state's patient registry in order to obtain medical cannabis (88%). However, 77% incorrectly thought that a prescription was required to obtain medical cannabis.

Most pharmacists knew that physicians can certify patients as having a qualifying condition (77%), but the majority was

unaware that advanced practice registered nurses (nurse practitioners) also have this authority (71%). A small proportion of respondents incorrectly believed pharmacists had this authority (17%). Forty-six percent and 29% of respondents, respectively, correctly understood the pharmacist's roles in consulting with patients about their treatment goals for medical cannabis and guiding patient selection of medical cannabis products at distribution centers. More than half of the pharmacists were aware that cannabis was federally classified as a Schedule I drug (62%). Approximately one-third thought cannabis was a Schedule II substance, and a handful thought it was a Schedule III–IV drug.

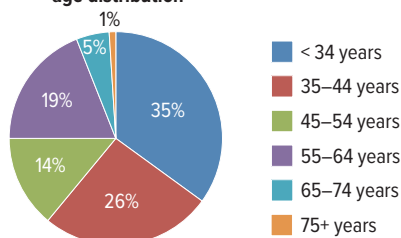
## Assessment of Medical Cannabis Concerns

Most pharmacists rated themselves on the lower end of the Likert scale for self-perceived knowledge about medical cannabis and readiness to counsel patients on medical cannabis use (1 = poor; 7 = excellent) and concerns about medical cannabis use under the Minnesota program (1 = no concern; 7 = most concern) (Tables 1 and 2). Respondents were also

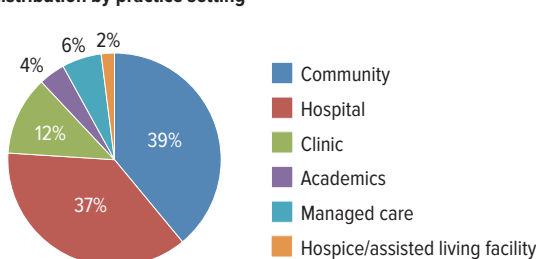
**Figure 1 Comparison of Respondent Characteristics and Characteristics of All Licensed Minnesota Pharmacists**

**Survey respondents/total emails registered with Minnesota Board of Pharmacy: N = 738/7,332**

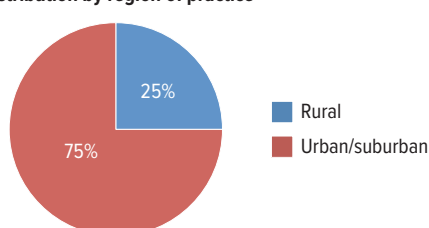
**Respondent pool's age distribution**



**Respondent pool's distribution by practice setting**

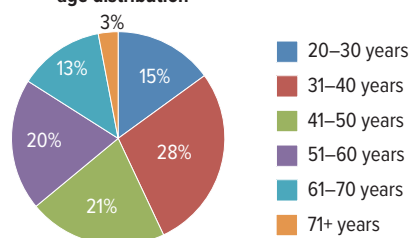


**Respondent pool's distribution by region of practice**

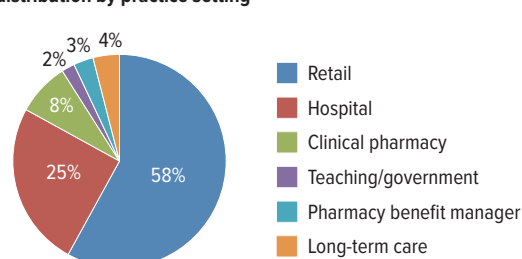


**Total Minnesota pharmacists with active license: N = 8,057**

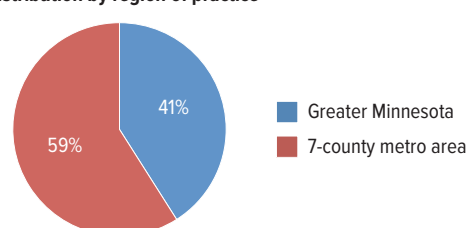
**Minnesota pharmacists' age distribution**



**Minnesota pharmacists' distribution by practice setting**



**Minnesota pharmacists' distribution by region of practice**



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encouraged to report other concerns on the questionnaire (see Appendix), and some indicated concern about diversion and abuse ( $n = 17$ ), psychoactive effects ( $n = 12$ ), and management of medical cannabis in the hospital setting ( $n = 9$ ). Eighty-eight percent of participants responded that they were less than moderately prepared to provide counseling services to patients using cannabis products.

As for the pharmacists' rating on the anticipated impact of the program, only 21% indicated concern about the program's potential impact on their current professional practice; about one-third of the respondents were unsure (32%) (Figure 2). The most frequent concerns were related to care transitions associated with hospital admissions ( $n = 42$ ), knowledge limitation on the topic ( $n = 27$ ), and the regulatory-related aspects of medical cannabis practice ( $n = 10$ ).

## Preferences for Future Education

Respondents were very interested in learning more about medical cannabis in the following areas: state-specific rules and regulation (87%), pharmacotherapy (88%), and available types and forms of products on the market (82%). Fifty-three percent were interested in learning more about federal laws related to marijuana. Only 7% indicated no interest in learning more about any of these topics. The survey included questions about the preferred source and delivery method for information on the Minnesota medical cannabis program. The Minnesota Board of Pharmacy was ranked as the most preferred source (62%), followed by the Minnesota Department of Health (23%) and the Minnesota Pharmacists Association (11%). The preferred routes of delivery were email (56%) and online courses (48%). Few identified mail (12%) and conferences (11%) as most preferred, and approximately 50% indicated they did not prefer these routes of delivery.

## DISCUSSION

To the best of our knowledge, this is the first survey of U.S. pharmacists' knowledge and opinions regarding medical

**Table 1 Pharmacists' Responses to Questions on Competency in Cannabis Clinical Knowledge Related to Its Usage**

*Question 6: On the scale of 1–7, please rate your competency level in medical cannabis pharmacotherapy knowledge in the following areas (1 = poor; 7 = excellent)*

	1–3	4	5–7	Mean	SD
Pharmacology	75.7%	14.4%	9.9%	2.4	1.4
Pharmacokinetics	85.7%	9.3%	5.0%	2.1	1.3
Pharmacodynamics	84.3%	10.9%	4.8%	2.1	1.3

SD = standard deviation

**Table 2 Pharmacists' Responses to Questions on Concerns Regarding Minnesota Medical Cannabis Program**

*Question 7: On the scale of 1–7, how concerned are you about the following factors regarding the use of medical cannabis? (1 = no concern; 7 = most concern)*

	1–3	4	5–7	Mean	SD
Federal regulation related to cannabis	34.6%	13.1%	52.3%	4.4	2.0
Consistency in quality of medical cannabis products	29.5%	15.9%	54.5%	4.5	1.8
Limited evidence of therapeutic benefits from cannabis use	43.4%	16.4%	40.2%	3.9	2.0
Safety concerns of cannabis use (i.e., drug interactions, contraindications, and adverse reactions)	28.3%	16.9%	54.8%	4.5	1.9
Psychoactive effect and potential addiction from cannabis use	36.4%	15.0%	48.7%	4.3	2.0

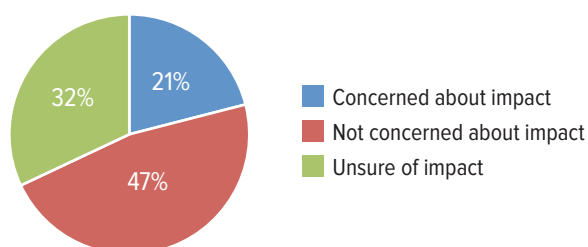
SD = standard deviation

cannabis and a state-specific medical cannabis program. We surveyed Minnesota pharmacists two months prior to the state's implementation of its medical cannabis program. Pharmacists appeared to have an incomplete understanding about their role in the imminent medical cannabis program, medical cannabis pharmacotherapy, and state-specific regulations. The majority had low self-perceived preparedness to provide counseling on medical cannabis products. The majority also reported a lack of concern about the medical cannabis program's potential impact on their practice, but most pharmacists were highly interested in filling their knowledge gaps about the program and cannabis as a medication.

In 2011, Mueller and colleagues evaluated pharmacy students' knowledge and attitudes regarding medical marijuana. Although the perceptions of students are not directly comparable with those of licensed pharmacists, it is interesting that both groups commonly reported being unprepared to counsel patients with information about medical cannabis products.<sup>5</sup> Both groups also reported interest in having more education on the topic.<sup>5</sup>

Less than a quarter of Minnesota pharmacists expressed concern regarding the impact medical cannabis would

**Figure 2 Pharmacists' Concern About How the Minnesota Medical Cannabis Program Would Impact Their Current Practice**





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potentially have on their practice. Many concerns focused on how the implementation of the medical cannabis program would affect the process of care transition for patients who use the product. Because medical cannabis is a Schedule I drug at the federal level, many pharmacists cited the need for more guidance on the management of product storage and administration during the patient's hospitalization. Some commented on the difficulty in verifying the product's integrity and safety as their patients' home medication per their institutional policy. Other concerns included worries about medical cannabis' psychoactive side effects, potentials for diversion and abuse, public and professional stigma, and the discrepancy between state and federal classifications.

The state legalization of a once-illicit substance as a therapeutic agent calls for pharmacists in all health care settings, as medication experts, to understand all aspects of cannabis products, including pharmacology, dosage forms, new evidence on efficacy and safety, and regulatory parameters regarding cannabis. Pharmacists must also become proficient in providing counseling about cannabis products to current or future patients whose medical conditions may benefit from its use. Comparable to the medication counseling that pharmacists already provide for federally recognized prescriptions, proper patient counseling can help to minimize misuse and safety concerns. The increasing number of states where medicinal use of cannabis has been legalized also means that many practicing pharmacists will encounter patients who use medical cannabis as part of their medication regimen. Pharmacists providing medication reconciliation, medication review, and/or comprehensive medication management need to be prepared to inquire about medical cannabis use and to feel comfortable counseling and monitoring medicinal cannabis patients. They could also aid in their state's research process by gathering information on medical cannabis' efficacy and safety based on their patients' medical cannabis utilization experience. Thus, pharmacists' general view that the medical cannabis program will have a low impact on their practice may underestimate the significance of this program on pharmacy practice. This is particularly true now that intractable pain has been added as a qualifying condition in Minnesota's medical cannabis program.<sup>4</sup> It is anticipated that this will greatly increase the number of registered patients in the program.

Most pharmacists had low self-rated competency in both regulatory and clinical aspects of medical cannabis and possessed only a partial understanding of the patient registry program. They lacked in-depth knowledge about the patient certification process and requirements. Most pharmacists did not know that advanced practice registered nurses, like physicians, can certify patients' medical cannabis eligibility. An overwhelming number of pharmacists also thought that prescriptions must be obtained in order for patients to purchase medical cannabis. This confusion may stem from the conflict presented by federal regulations that prohibit Schedule I substances (such as cannabis) from being legally prescribed. States have been required to develop alternative systems and terminology to allow for medical cannabis use. The common terms that are used in place of "prescription" in these states include "recommendation" (i.e., Arizona, California, and Colorado) and "certification" (i.e., Delaware, Hawaii, and Minnesota).<sup>6-10</sup> However, limitations on

form, strength, and amount of cannabis for possession or cultivation are typically determined by state-specific regulation rather than direction by the health care practitioner who provides the recommendation or certification.

Most pharmacists are interested in learning more about cannabis as a medicine and its state-level regulation. Findings from this study indicated that most pharmacists preferred to obtain their educational resources from the state's Board of Pharmacy and Department of Health. They also preferred asynchronous learning methods through email and Web-based continuing education (CE) rather than by attending a conference. Recognized as the most accessible health care professional by patients, pharmacists play a vital part in safeguarding public health through ensuring proper medication usage. With Connecticut as the first state model with pharmacists integrated into the medical cannabis program, the collective members of the profession in corresponding states with legalized medical cannabis should become more engaged in encouraging legislative support for similar programs in their home states.<sup>11-13</sup> In Minnesota, the state's Department of Health collects information from registered medicinal cannabis patients to facilitate a better understanding of potential clinical benefits and harms from cannabis usage. Mirroring this registry in affiliated states will help bolster the collection of medical cannabis data that are valuable for determination of indications, dosing, efficacy, and safety; therefore, the pharmacy community should advocate for the creation of such registries.<sup>11-14</sup>

Since the time of the survey, Minnesota's Office of Medical Cannabis staff has provided educational presentations to many hospitals, clinics, and hospital-clinic organizations in Minnesota with pharmacists as part of the audience. In addition, presentations have been provided to numerous professional organizations, including statewide pharmacist groups. The University of Minnesota College of Pharmacy, as well as the Medical School and School of Nursing, worked with the Office of Medical Cannabis to produce a well-attended, in-person, CE-granting, full-day educational symposium on medical cannabis in April 2016. Professional organizations, such as the Minnesota Pharmacists Association (MPhA) and the Minnesota College of Clinical Pharmacists, have also delivered educational presentations to pharmacists at statewide conferences, including the 2015 MPhA Legislative Day and the 2015 Annual Learning Networking Event, as well as a CE event titled "Arriving at a Precipice: Medical Cannabis in Minnesota." The University of Minnesota College of Pharmacy is currently in the planning stage for a Web-based educational program that will grant CE credit on medical cannabis and the Minnesota medical cannabis program.

### Strengths of This Study

Among the strengths of our study is that the study population was made up of practicing pharmacists who were registered with the Minnesota State Board of Pharmacy shortly before the medical cannabis program went into effect. Information about the program was widely disseminated in the media at the time, so it is likely that most of the pharmacy community in Minnesota was aware of program, but because it had not been implemented, they had not yet experienced the program's effect on their practice. Our results reinforce that pharmacists perceive the need for targeted education regarding medicinal

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cannabis before the initiation of their state-specific program—education that is likely also lacking in health care professions without a pharmacological focus.

## Limitations of This Study

Our study was conducted in the state of Minnesota. Thus, the results may not be representative of pharmacists' perceptions in other states. Selection bias may have been introduced by participants' self-selected participation. In comparison with Minnesota's statistics on the state's pharmacists, survey respondents were younger, more likely to be from nonrural areas, and more likely to practice in clinical and hospital settings rather than in community dispensing pharmacies. The low response rate of 10% may also indicate low generalizability of the results to the entire targeted population. Regarding the knowledge assessment section of the questionnaire, some respondents may be unaware of the difference in federal scheduling between cannabis and cannabinoid products, such as dronabinol and nabilone. This may have led to the incorrect selection of the response as a result.

## CONCLUSION

This study suggests that Minnesota pharmacists were not sufficiently prepared to work with patients in the medical cannabis program. Of those who provided survey responses, an overwhelming majority felt incompetent in medical cannabis clinical knowledge; however, almost half were unconcerned about the potential impact the program's implementation would have on their practice. Nonetheless, pharmacists were interested in learning about medical cannabis and its state-specific regulation. Targeted education regarding cannabis pharmacotherapy, product availability and variability, and state-specific regulations should be available for health care professionals practicing in states with medical cannabis programs prior to program implementation and patient access.

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## APPENDIX

### Survey on Pharmacists' Knowledge of and Concerns About Medical Cannabis Use and Regulations by the Minnesota Medical Cannabis Program

#### Demographic Information

1. Please select your age range:
  - ☐ Less than 34
  - ☐ 35–44
  - ☐ 45–54
  - ☐ 55–64
  - ☐ 65–74
  - ☐ 75+
2. What is your primary pharmacy practice setting? (Select one.)
  - ☐ Academics
  - ☐ Community
  - ☐ Clinic
  - ☐ Managed care
  - ☐ Hospital
  - ☐ Hospice/Assisted living facility
3. Which of the following areas do you practice in?
  - ☐ Rural
  - ☐ Urban/Suburban

#### Knowledge Assessment

4. In May 2014, the medical cannabis legislation was signed into law in Minnesota. Which of the following dosage forms are permitted for use? (Select all that apply.)
  - ☐ Smoked marijuana leaves
  - ☐ Inhaled marijuana from cannabis extract
  - ☐ Topical cannabis lotion or ointment
  - ☐ Cannabis extracts in oral pill form

*appendix continues*

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**5. Which of the following medical conditions are eligible for medical cannabis use in Minnesota? (Select all that apply.)**

- ☐ Cancer-related pain
- ☐ Rheumatoid arthritis
- ☐ Terminal illness with less than one year of life expectancy
- ☐ Seizures/epilepsy
- ☐ Hydrocephalus
- ☐ Tourette syndrome
- ☐ Migraine
- ☐ ALS
- ☐ Crohn's disease
- ☐ Hepatitis C
- ☐ Glaucoma
- ☐ HIV/AIDS
- ☐ Severe and persistent muscle spasms

**6. Which of the following statement(s) is/are true? (Select all true statement[s].)**

- ☐ Prescriptions are needed to purchase medical cannabis products in Minnesota
- ☐ Enrollment in the Minnesota State's patient registry is required to obtain medical cannabis products
- ☐ Pharmacists can certify patients' eligibility for Minnesota's Medical Cannabis Program
- ☐ Advanced practice registered nurses (nurse practitioners) can certify patients' eligibility for Minnesota's Medical Cannabis Program
- ☐ Medical doctors can certify patients' eligibility for Minnesota's Medical Cannabis Program
- ☐ None of the above statements is true

**7. What is the role of pharmacists who are employed in Minnesota's Medical Cannabis Program? (Select all true statement[s].)**

- ☐ Pharmacists guide patients' selection of medical cannabis products
- ☐ Pharmacists provide assistance for patients at the distribution centers
- ☐ Pharmacists determine patients' eligibility for medical cannabis use
- ☐ Pharmacists dispense medical cannabis products at eligible pharmacies
- ☐ None of the above statements is true

**8. Under the Controlled Substances Act (CSA), how is medical cannabis classified? (Select one.)**

- ☐ Schedule I
- ☐ Schedule II
- ☐ Schedule III
- ☐ Schedule IV
- ☐ Schedule V

## Concerns Assessment

**9. On the scale of 1–7, please rate your competency level in medical cannabis pharmacotherapy knowledge in the following areas (1 = poor; 7 = excellent):**

Pharmacology:

1    2    3    4    5    6    7

Pharmacokinetics:

1    2    3    4    5    6    7

Pharmacodynamics:

1    2    3    4    5    6    7

**10. On the scale of 1–7, how concerned are you about the following factors regarding the use of medical cannabis? (1 = no concern; 7 = most concern)**

Safety concerns of cannabis use (i.e., drug interactions, contraindications, and adverse reactions)

1    2    3    4    5    6    7

Consistency in quality of medical cannabis products

1    2    3    4    5    6    7

Federal regulation related to cannabis

1    2    3    4    5    6    7

Psychoactive effect and potential addiction from cannabis use

1    2    3    4    5    6    7

Limited evidence of therapeutic benefits from cannabis use

1    2    3    4    5    6    7

**11. In continuation with the previous question, if you have other concern(s) regarding the use of medical cannabis that did not appear on the list, please explain in the provided space below:**

**12. Do you have any concerns about how the Minnesota Medical Cannabis Program will impact your current practice?**

☐ Yes (please explain below)

☐ No

☐ Unsure

**13. On the scale of 1–7, how prepared are you to provide medication counseling to patients who use medical cannabis as part of their medication regimen? (Select one.) (1 = not at all prepared; 7 = very much prepared)**

1    2    3    4    5    6    7

## Future Education and Information

**14. To provide you with more education and information, please select the topics about Minnesota's Medical Cannabis Program you would like to learn more about. (Select all that apply.)**

- ☐ State rules and regulations governing the Minnesota Medical Cannabis Program
- ☐ Federal laws related to marijuana
- ☐ Medical cannabis pharmacotherapy
- ☐ Available types and forms of medical cannabis products on the market
- ☐ I am not interested in learning about Minnesota's Medical Cannabis Program (do not proceed beyond this question)
- ☐ Other (please specify below):

**15. Based on your selection(s) from the previous question, which is the top topic you're most interested in? (Select one.)**

- ☐ State rules and regulations governing the Minnesota Medical Cannabis Program
- ☐ Federal laws related to marijuana
- ☐ Medical cannabis pharmacotherapy
- ☐ Available types and forms of medical cannabis products on the market
- ☐ Other (please specify below):

**16. Please rank the top three choices of the following as your primary resource of information related to the Minnesota Medical Cannabis Program? (1 = top choice; 3 = less preferred choice)**

- ☐ Minnesota Board of Pharmacy
- ☐ Minnesota Department of Health
- ☐ Minnesota Pharmacist Association
- ☐ None; I have no interest in the topic
- ☐ Other (please specify below):

**17. What is/are your preferred method(s) to receive information and education about the Minnesota Medical Cannabis Program?**

	Not Preferred	Preferred	Most Preferred
E-mail:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Mail:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Conference:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Online Course:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other (please specify below):			